THE

ONTARIO WATER RESOURCES

COMMISSION

WATER POLLUTION SURVEY

of the

POLICE VILLAGE OF COMBER

TOWNSHIP OF TILBURY WEST

1969

REPORT

ON A

WATER POLLUTION SURVEY

OF THE

POLICE VILLAGE OF COMBER

TOWNSHIP OF TILBURY WEST

COUNTY OF ESSEX

1969

District Engineers Branch
Division of Sanitary Engineering

ONTARIO WATER RESOURCES COMMISSION

REPORT

INTRODUCTION:

A water pollution survey of water quality in surface water drains, storm sewers and watercourses in the Police Village of Comber was conducted in May 1969. Mr. C. Ward, Hydro and Water Commissioner, supplied information pertinent to the survey and Mr. E. V. Beattie, Village Foreman, provided information as to the sizes and locations of existing drains and assisted with the sampling programme.

Water pollution surveys are conducted on a routine basis by the Ontario Water Resources Commission for the purpose of locating, recording and evaluating sources of existing and potential pollution to watercourses. Enquiries and investigations are made with respect to drains which discharge to local watercourses and samples are collected to determine the significance of the drain discharges and their effects on the receiving waters. Where pollution sources are noted, recommendations are made concerning their abatement.

Where water pollution control works appear desirable, or expansions to present facilities are necessary, the OWRC has a programme to aid in the construction and financing of these works (See Appendix).

GENERAL:

The Police Village of Comber, with an assessed population of 579 (1969 Municipal Directory) is situated in the Township of Tilbury West, County of Essex. The municipality is located just south of the junction of Highways #401 and #77 approximately six miles south of Lake St. Clair.

In general, most surface waters and other drainage from the village are directed in a southerly direction to the No. 1 Drain which flows to Big Creek and, in turn, to Lake St. Clair. A small northern portion of Comber (area north of the railway) drains directly to an open roadside ditch which flows in a northerly direction to the Lake. Also, a small area near the northeasterly limits of the village is drained by an open ditch flowing east and presumably to Big Creek.

The estimated sizes and locations of drains in the municipality and directions of flow are indicated on the accompanying map.

Soil conditions in the area are not suitable for the efficient functioning of septic tank field tile disposal units. Consequently, problems are being encountered with the operation of such systems.

The Police Village of Comber does not posses an Official Plan. As recently discussed with the Community Planning

Branch, such a plan would be useful for controlling the municipality's development in the event that more than limited growth is contemplated. A section headed "Community Planning" has been included in the appendix of this report.

WATER SUPPLY:

Water for the municipality is obtained from a drilled well 135 feet deep. Water treatment consists of aeration, settling and chlorination prior to delivery to the distribution system.

The chemical quality of the present water supply is unsatisfactory; the water is extraordinarily hard with iron and chloride concentrations substantially in excess of OWRC standards. Consequently, plans are underway for the construction of an 8-inch water main, under Provincial Financing, from the Police Village of Stoney Point to service Comber.

WATER POLLUTION:

Sewage Treatment Facilities

The Police Village of Comber does not have a communal sewage collection and treatment system. Individual septic tank systems are utilized for the disposal of sanitary wastes. In many cases, these systems do not operate effectively because the clayey soil conditions in the area impair the functions of field tile disposal beds. Also, in parts of the municipality, particu-

larly the more built-up and business areas, sufficient space is not available for the installation of adequate field tile disposal beds. Consequently, direct connections from private disposal units to surface water drains have illegally been made. This has resulted in the discharging of inadequately treated sanitary sewage into the local surface water drainage system.

It should be noted also that the Department of Highways is proposing to install a new storm drain along the main street in Comber in the near future. The septic tank systems in the municipality which are presently connected to the existing storm sewer which is to be replaced, reportedly will not be permitted to reconnect to the new sewer and this will probably aggravate the existing pollution problem even further.

Industrial Wastes

The municipality consists mainly of residential and commercial assessment with no major "wet" industries producing large volumes of waste water requiring treatment.

REFUSE DISPOSAL:

Refuse from the municipality is disposed of in an area near the north-easterly limits of Comber. This operation does not appear to constitute a pollution hazard to watercourses or ground water.

WATER QUALITY ANALYSES:

As a measure in locating and assessing the degree of pollution being discharged from Comber, water samples were collected, where possible, from the flows of all known surface water and storm sewer outfalls. Representative samples were also collected from the receiving drainage ditches in the area.

The sanitary chemical analyses and results of bacteriological examinations of samples collected are listed in Table I. The locations of sampling points are designated on the accompanying map. Approximate locations, sizes and directions of flow of existing drains are also indicated on the map.

INTERPRETATION AND SIGNIFICANCE OF ANALYSES RESULTS:

For convenience in the interpretation of laboratory analyses results, the Ontario Water Resources Commission water quality objectives for surface water drains and watercourses are listed as follows:

Bacteriological Examination

The membrane filter (MF) technique is employed at OWRC Laboratories to obtain a direct enumeration of coliform organisms and is reported per 100 millilitres (ml) of the sample.

The presence of coliforms may indicate pollution from both faecal and non-faecal sources while E.Coli organisms indicate pollution of intestinal origin only. The maximum limit of

2,400 coliform organisms per 100 millilitres is the objective for bacteriological quality of surface water in Ontario.

Sanitary Chemical Analyses

Biochemical Oxygen Demand (BOD)

The BOD of sewage or polluted waters is the oxygen required during stabilization of the decomposible organic material by aerobic biochemical action. A five-day BOD determination with incubation at 20 degrees Centigrade is reported. A high BOD is indicative of organic or chemical pollution. A desirable upper limit in surface water is four (4) parts per million (ppm) while the objective maximum in waste discharges to a watercourse is 15 ppm.

Solids

The value for total solids, expressed in parts per million (ppm), is the sum of the values for the suspended and dissolved matter in water. The concentration of suspended solids which indicates the measure of undissolved solids of organic or inorganic nature is generally the most significant of the solids analyses in regard to surface water quality. The effects of suspended solids in water are reflected in difficulties associated with water purification, deposition in streams, and injury to the habitat of fish. The OWRC's objective for discharge is a suspended solids concentration of not greater than 15 ppm.

SIGNIFICANCE OF ANALYSES RESULTS:

By comparing the laboratory analyses results of samples collected during the survey with the objective water quality figures already presented in this report, the levels of pollution can be established. It is readily evident that extremely high levels of pollution were noted in all of the drain outfalls examined. Sanitary chemical analyses and bacteriological examinations revealed BOD and suspended solids concentrations and coliform organism counts ranging to many times in excess of the maximum recommended levels. These excessively high values indicate the contamination to be caused by sanitary sewage.

This sanitary sewage may be gaining access to the surface water drainage system because of:

1) Inadequacy of septic tank systems. This is particularly due to the adverse clayey soil conditions which do not lend themselves to the suitable operation of field tile disposal systems. Also, it is probably that, in many business properties and also in residential properties, sufficient space is not available for the installation of adequate field tile disposal beds. The lack of land area and unsatisfactory soil conditions for retention disposal has necessitated the discharge of overflow from the septic tanks and from the tile beds directly into the surface water drainage system. This septic material is

a major source of pollution.

2) It is also probable that there is direct discharge of sanitary sewage and domestic waste through private drains into the surface water drainage system. Laundry and kitchen sink wastes are probably being disposed of in this manner.

The discharge of polluting materials into a drainage system or watercourse constitutes a violation of regulations under the Ontario Water Resources Commission Act, Section 27, subsection 1.

SUMMARY AND CONCLUSION:

This is a report on a water pollution survey carried out in the Police Village of Comber, the purpose of which was to locate existing and potential sources of water pollution in the community. The survey was conducted in 1969 and the report is based on observations of field surveys and results of chemical analyses and bacteriological examinations of water samples collected at that time.

The survey revealed that sanitary sewage from the municipality is constituting a serious pollution problem both in and around Comber and also in downstream areas. Sanitary wastes are gaining access to the municipal surface water drainage system which discharges to watercourses flowing to Lake St. Clair. The problem is due to adverse soil conditions in the area and small

lot sizes which result in unsatisfactory septic tank systems. Therefore, further development on septic tank systems is not recommended.

Correcitve action is required in order to alleviate the present conditions of pollution. Since adverse soil conditions and lot size limitations would not warrant corrective measures on an individual basis, possibly the best solution would be the construction of an adequate sewage collection and treatment system. It should be noted, however, that the local watercourses have a very limited assimilation capacity and that any works undertaken should concur with this limitation.

To ensure that any future development is properly planned and regulated and that satisfactory servicing is provided, it would be most beneficial to prepare and adopt an Official Plan.

It is noted that, in the interim since the survey was conducted, the municipality has met with members from this Commission. The extent of pollution and the need for corrective measures were discussed and recently the municipality has applied to the Ontario Water Resources Commission for a sewerage project under Provincial Financing.

In view of the existing problem and, since further development on septic tank systems is unwise, it is hoped that

the project will proceed as quickly as possible.

RECOMMENDATIONS:

The pollution abatement programme leading to the construction of adequate sewage collection and treatment facilities for the Police Village of Comber should proceed as quickly as possible.

Prepared by: A. Burlachenko

A. Burlachenko, Technologist,
Division of Sanitary Engineering.

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POLICE VILLAGE OF COMBER

WATER POLLUTION SURVEY

May 6, 1969

Sampling Point No.	Description	BOD	Solids			Coliforms Per 100 ML
			Tot.	Susp.	Diss.	
1	No. 1 Drain - South of Hwy. #98	70.	1,990	22	1,968	5,200,000
2	Open Ditch - S. of Hwy. #98 at Westerly Village Limits	16.	746	28	718	12
3	Open Ditch - N. Side of Hwy. #98 at Westerly Village Limits	13.	900	128	772	900
4	Taylor Ave. - Old Outfall	95.	2,692	86	2,606	20,000,000
5	Taylor Ave. - New Outfall	12.	2,374	10	2,364	250,000
6	Main St. Outfall - North Limits of Village	190.	1,690	186	1,504	230,000,000
7	Ford St. Outfall - East of Village	17.	1,306	138	1,168	10,000

Note: All results are in ppm unless otherwise indicated.

APPENDIX

IMPLEMENTATION OF WATER AND SEWAGE WORKS PROGRAMMES

Currently, there are three general methods which may be utilized for implementing sewage and water works programmes. These are: 1) to enter into an agreement with the OWRC for the construction of the treatment and collector works with an obligation to pay the debt retirement and operating charges over the term of the agreement with the facility reverting to the municipality at the end of the term of the agreement, 2) by requesting the provision of service from a Provincially-owned project, and 3) by proceeding with the construction independently and meeting capital costs by the sale of debentures.

OWRC/MUNICIPAL PROJECTS

For the construction of water and sewage works under agreement with this Commission, the works are provided and developed under Sections 39 to 46 of the Ontario Water Resources Commission Act.

For this type of arrangement, the Commission utilizes a sinking fund and consequently the annual payments are based on a specific debt retirement period and the payments are unchanged for the period of the agreement. This type of project may be financed over a period of time up to a maximum of thirty years. The annual charges for projects constructed under this agreement are determined as follows:

1. Capital Repayment

As noted, OWRC financing is by the sinking fund method and an annual payment of approximately 2 per cent of the capital cost is required to retire a debt over a thirty-year period.

2. Interest

On new Commission projects, interest is calculated at the current rate.

3. Reserve Fund

To provide money for repairs and replacements, Section 40 of The Ontario Water Resources Commission Act provides for the establishment of a reserve fund by the Commission. It is important to note that this fund is established in the name of the municipality and the balance consequently earns interest. It has now been established by Commission minutes that the reserve fund billing for each project shall continue only until the fund reaches an amount of ten times the initial annual billing and the reserve fund billing shall be re-imposed only when the fund has been depleted to 80 per cent or less of the maximum amount.

4. Operating Costs

Under OWRC agreement, the municipality is responsible only for the operating costs directly attributed to the project in the municipality. Therefore, no charges are made by the Commission for the services of head office personnel who are available as required to advise on the satisfactory operation and maintenance of the project.

PROVINCIALLY-OWNED WORKS

In June 1967, the Honourable J. R. Simonett, Minister of Energy and Resources Management, made an announcement which expanded the authorization of this Commission for the provision of water supply and sewage treatment facilities. This new programme allows the Commission to construct entire water and sewage works facilities for small municipalities. The capital costs of these can be amortized over a 40 year period.

A slight variation of this programme could be implemented in that the municipality may request that this Commission provide only the major water and sewage works facilities as Provincially-owned works, and develop the water distribution and sewage collector systems under the standard type of Commission project. It would appear that, where applicable, it would be more advantageous for the municipality to proceed on the basis of requesting this Commission to develop entire systems as Provincially-owned works.

The associated cost of supplying these works, including amortization of capital costs, together with operating and maintenance charges, will be recovered by the sale of service to the affected municipalities by rates determined on a usage basis. These facilities will be wholly-owned by the Province of Ontario and the arrangements for service will be formalized by contracts between the Commission and the municipality concerned. The installations will be operated entirely at cost with appropriate provision for adjustment in rate.

COMMUNITY PLANNING

The need for effective planning has become more important today than every before. Municipalities are being burdened with the rising costs of land and labour. Therefore, any project a community hopes to develop should be based on sound planning. Planning at all levels of government is essential but, community planning can be most effective if interest and initiative is generated at the local level. The enormous benefits accrued as a result of good planning can more than compensate for the initial investment.

Community planning can be described as an effort to control and direct development effectively. This can best be achieved through the development of an official plan. An official plan is the stated intention of the local authorities with respect to orderly development within the planning area, that is prepared

and set forth with professional assistance and meets the requirements as set out by the Provincial Planning Act. An official plan can be a joint effort by a number of municipalities which have common basic characteristics and common problems, or one municipality can establish a plan on its own initiative.

Orderly development yields future economy in services. Development in the community can be retarded where an official plan does not exist. A plan provides, among other things, the framework for the rational design of water and sewage works and also the extensions of mains and collector sewer systems.

A local council having decided to proceed with a programme of community planning definitely should contact the Ontario Department of Municipal Affairs. Through its many branches, information and guidance is provided to all interested parties.

COMBER

N

ESSO GAS SUPPLY (UNDERGROUND TANKS)

WELDING SHOP

TAYLOR

30" CONCRETE SEWER

KINGS HIGHWAY No. 98

WATER WORKS

No. 1 DRAIN FLOWS TO BIG CREEK

ELM ST.

GULF STA.

MAIN STREET

ROAD

STREET

MIDDLE

WILLIAM

ABBOTT AVE

MARKHAM GARAGE

WINSOR ST.

TILE YARD

WALNUT ST.

FLOW

KINGS HIGHWAY No. 98

FLOW

FLOW

AINSLIE AVENUE

FORD STREET

MICHIGAN CENTRAL RAILWAY

TAYLOR AVE

JAMES STREET

TWP OFFICES

McALLASTER STREET

FAIR GROUNDS

TO LAKE ST. CLAIR - APPROX. 6 MI.

HOTEL

MAPLE STREET

WALLACE AVE

SILOS

LUMBER YARD

AGRICO FERTILIZER

TOWN DUMP

DRAIN OUTFALL APPROX 200' EAST

LEGEND

② – SAMPLING POINTS

——— – COVERED DRAIN

— — — – OPEN DRAIN OR DITCH

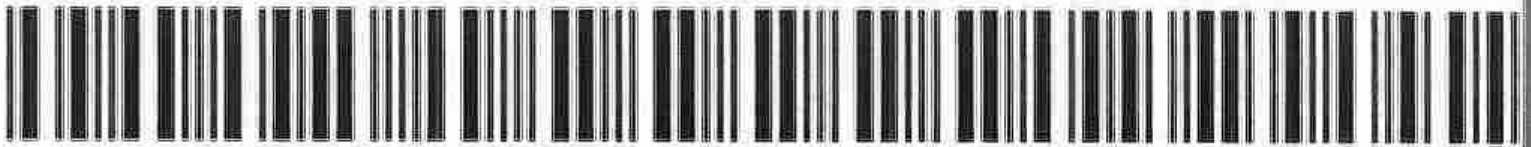
ONTARIO WATER RESOURCES COMMISSION

VILLAGE OF COMBER

WATER POLLUTION SURVEY

1969

SCALE: 1" = 200'	
DRAWN BY: M. SUPER	DATE: JUNE, 1969
CHECKED BY:	DRAWING No.: 69-76-DE.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